TECHNICAL SPECIFICATIONS

INDEX TO

TECHNICAL SPECIFICATIONS

HOLMGREN FAS PHASE II SITE DEVELOPEMENT

FWP# 7113718

SECTION 01010 - SUMMARY OF WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Owner and Contractor Responsibilities

B. Contractor use of site and premises.

C. Scope of Work

1.2 Owner and Contractor Responsibilities

A. Owners Responsibilities:

1. Staking of centerline stationing, radius points, and parking area corners.
2. Coordination of site access with Montana Department Fish Wildlife and Parks.
3. Permitting.

B. Contractors Responsibilities:

1. Quality control of work.
2. Coordination with FWP Engineer Kevin McDonnell

1.3 CONTRACTOR USE OF SITE

A. Limit use of site to allow:

1. Coordinate with FWP to limit public usage in work areas as necessary.

1.3 SCOPE OF WORK

A. Project Objective: Construction of access, parking, boat ramp and related items to complete Phase II of the Holmgren Fishing Access Site.

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B. Scope of Work:

Work includes the following but is not limited to the general description contained herein:

SCHEDULE 1 BASE BID ITEMS:

1. Mobilization
2. Excavation – Includes all unclassified excavation, rough grading, removal of spoils to deposit area, leveling of spoils, and deepening existing ditches.
3. Base Course – Includes all materials and labor to install 3" minus base course for roads, boat ramp and parking areas.
4. Culverts – Includes all labor and material for complete installation of (6) 12" x 20' HDPE culverts with flared end sections per manufacturers recommendations.
5. Drain Rock – Includes all labor and material for complete installation of drain along the boat ramp including approved filter fabric.
6. Erosion Control Fabric – Includes all labor and material for complete installation of erosion control fabric per details and manufacturers recommendations.
7. Fencing – Includes all labor and material for complete installation fence and gates per plans and specifications.
8. Seeding – Includes all labor and materials to seed areas disturbed during construction, vegetated parking Island, and spoils deposit area per plans and specifications.
9. Parking Blocks – Includes all labor and materials to install standard pin-down concrete parking blocks.

ALTERNATES:

1. Crushed Top Surfacing – Includes all labor and materials to install crushed gravel surfacing on access roads and parking.

C. CONTRACTS:

All work shall be done under one general contract.

END OF SECTION

SECTION 01019 - CONTRACT CONSIDERATIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Inspection and Testing Allowances
B. Application for Payment
C. Change procedures
D. Project Staking
E. Environmental Considerations

1.2 RELATED SECTIONS

A. Section 01025 - Measurement and Payment.
B. Section 01400 - Quality Control

1.3 INSPECTION AND TESTING ALLOWANCES

A. Testing costs paid for by Contractor:
   1. Costs of incidental labor and facilities required to assist inspection or testing firm.
   2. Costs of retesting due to failure of previous tests as determined by FWP Engineer.

1.4 APPLICATIONS FOR PAYMENT

A. Submit 1 copy of each application on Department Fish, Wildlife and Parks Form 101.

B. Content and Format: Utilize Schedule of Values on proposal form for listing items in Application for Payment.

C. Payment Period: 30 days.

1.5 CHANGE ORDER PROCEDURES

A. The Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by State of Montana, General Conditions of the Contract.

B. The Engineer may issue a Change Directive, which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change. Contractor will prepare and submit an estimate within 5 days.

C. The Contractor may propose changes by submitting a request for change to the Engineer describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors.

D. Unit Price Change Order: For pre-determined unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units, which are not pre-determined, execute Work under a Construction Change Directive. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.

1.6 PROJECT STAKING

A. Construction staking provided by the owner

1. Staking of centerline stationing, radius points, and parking area corners.
2. If owners staking is destroyed through careless actions of the Contractor, the staking may be replaced by the owner and the cost of replacement deducted from the Contractor's contract.

B. Construction staking provided by the Contractor

1. All staking desired by the Contractor in addition to that noted above shall be provided by the Contractor.

1.7 ENVIRONMENTAL CONSIDERATIONS

A. The Contractor shall use best management practices to prevent silt, soil and debris from entering the water. This may include straw, gravel or fabric. Temporary dikes to divert rainwater may be used, provided they are removed and the gravel or soil returned to the original condition. Exposed soil may require straw or similar cover to minimize erosion caused by rain. Other appropriate methods may be used at the Contractors' discretion or as directed by the owner.

B. Equipment used in or near water shall not leak fluids. It shall be power washed before use on the site and examined by the engineer.

C. All material removed from the site will be disposed of in a safe and legal manner.

END OF SECTION

SECTION 01025 - MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Measurement and payment criteria applicable to the Work performed under a unit price payment method.

B. Defect assessment and non-payment for rejected work.

1.2 AUTHORITY

A. Measurement methods delineated in the individual specification sections are intended to complement the criteria of this section. In the event of conflict, the requirements of the individual specification section shall govern.

B. Take all measurements and compute quantities. The Engineer will verify measurements and quantities.

C. Assist by providing necessary equipment, workers, and survey personnel as required.

1.3 UNIT QUANTITIES SPECIFIED

A. Unit price quantities and measurements indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the Engineer shall determine payment. Lump sum bid item quantities will not be measured. Payment for these lump sum bid items will be per bid form.

B. If the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit sum/prices contracted.

1.4 MEASUREMENT OF QUANTITIES

A. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.

B. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

1.5 PAYMENT

A. Payment Includes: Full compensation for all required labor, Products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

B. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Architect/Engineer multiplied by the unit sum/price for Work which is incorporated in or made necessary by the Work.

1.6 DEFECT ASSESSMENT

A. Replace the Work, or portions of the Work, not conforming to specified requirements.

B. If, in the opinion of the Engineer it is not practical to remove and replace the Work, the Engineer will direct one of the following remedies:

1. The defective Work will be repaired to the instructions of the Montana Department of Fish, Wildlife and Parks Engineer and the unit sum/price will be adjusted to a new sum/price at the discretion of the Montana Department of Fish, Wildlife and Parks Project Engineer.

2. The defective work will not be repaired. The Project Engineer will adjust the unit sum/price of the work to reflect the degree of defectiveness and subsequent serviceability.

C. The individual specification sections may modify these options or may identify a specific formula or percentage sum/price reduction.

D. The authority of the Montana Department of Fish, Wildlife and Park Project Engineer to assess the defect and identify payment adjustment, is final.

1.7 NON-PAYMENT FOR REJECTED PRODUCTS

A. Payment will not be made for any of the following:
1. Products wasted or disposed of in a manner that is not acceptable.
2. Products determined as unacceptable before or after placement.
3. Products not completely unloaded from the transporting vehicle.
4. Products placed beyond the lines and levels of the required Work.
5. Products remaining on hand after completion of the Work.
6. Loading, hauling and disposing of rejected Products.

END SECTION

SECTION 01029

UTILITIES WITHIN WORK AREAS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Utilities within work areas.

B. Contractor's responsibilities.

1.2 UTILITIES WITHIN WORK AREAS

A. The contractor shall be responsible for determining the location of any utilities in the project area.
B. The contractor shall be responsible for working safely around any utilities that are located within the project area.

1.3 CONTRACTOR RESPONSIBILITIES

A. Notification: The Contractor shall contact, in writing, all public and private utility companies that may have utilities that may be encountered during excavation. The notification shall include the following information:

1. The nature of the work the Contractor will be performing.

2. The time, date, and location the Contractor will be performing work that may conflict with the utility.

3. The nature of work the utility will be required to perform such as moving a power pole, supporting a pole or underground cable, etc.

4. Requests for field location and identification of utilities.

B. Overhead Utilities: The Contractor shall use extreme caution to avoid a conflict, contact, or damage to overhead utilities such as power lines, telephone lines, television lines, poles, or other appurtenances during the course of construction of this project.

END OF SECTION

SECTION 01039

COORDINATION AND MEETINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Coordination.
B. Alteration project procedures.
C. Preconstruction conference.

1.2 COORDINATION

A. Coordinate scheduling, submittals, and Work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Coordinate completion and clean up of Work of separate Sections in preparation for Substantial Completion.

C. After Owner occupancy of site, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

D. Contractor will coordinate all work activities with the Montana Department of Fish, Wildlife and Parks Engineer Kevin McDonnell.

1.3 PRECONSTRUCTION CONFERENCE

A. Engineer will schedule a conference after Notice of Award is issued.

B. Attendance Required: Engineer, Contractor and the Regional Fish, Wildlife and Parks representative when possible.

C. Agenda:
1. Execution of Owner-Contractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of list of Subcontractors, list of products, Schedule of Values, and progress schedule.
5. Designation of personnel representing the parties in Contract, and the Engineer.
6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders and Contract closeout procedures.
7. Scheduling.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Submittal procedures.
B. Construction progress schedules.
C. Proposed products list.
D. Product data.
E. Samples.
F. Manufacturers' instructions.
G. Manufacturers' certificates.
H. Construction photographs.

1.2 SUBMITTAL PROCEDURES

A. Transmit each submittal to Project Manager no less than 15 days before product installation.
B. Apply Contractor's stamp, signature or initial certifying that review and verification of Products submitted, is in accordance with the requirements of the Work and Contract Documents.
C. Schedule submittals to expedite the Project.

D. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.

E. Revise and resubmit submittals as required, identify all changes made since previous submittal.

1.3 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial progress schedule within 15 days after date established in Notice to Proceed for Project Manager's review.

1.3 PROPOSED PRODUCTS LIST

A. Within 15 days after date of Notice to Proceed, submit complete list of major products/aggregates proposed for use, with name of manufacturer/supplier, trade name, and model number of each product.

B. 15 days prior to installation of surfacing aggregate materials, submit aggregate laboratory test analysis for the aggregate along with the name of the supplier.

C. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.5 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, in quantities specified for Product Data.

B. Identify conflicts between manufacturers' instructions and Contract Documents.

1.6 MANUFACTURER'S CERTIFICATES

A. When specified in individual specification Sections, submit manufacturers' certificate to Engineer for review, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Engineer.

END OF SECTION

SECTION 01400

QUALITY CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Quality assurance and control of installation.

B. References

C. Inspection and testing laboratory services.

1.2 QUALITY ASSURANCE/CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply fully with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons qualified to produce workmanship of specified quality.

F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.3 REFERENCES

A. Conform to reference standard by date of issue current on January 1, 2005.

B. Should specified reference standards conflict with Contract Documents, or Regulations request clarification for Architect/Engineer before proceeding.

C. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.4 INSPECTION AND TESTING LABORATORY SERVICES

A. Contractor will appoint, employ, and pay for services of an independent firm to perform inspection and testing.

B. The independent firm will perform inspections, tests, and other services specified in individual specification sections and as required by the Architect/Engineer.

C. Reports will be submitted by the independent firm to the Architect/Engineer, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.

D. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Architect/Engineer. Payment for retesting will be charged to the Contractor.

E. The Contractor shall deliver to laboratory at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs.

F. The Contractor shall cooperate with laboratory personnel, and provide access to the work.

G. The Contractor shall provide incidental labor tools and facilities to provide access to work to be tested, to obtain and handle samples at the site or at source of products to be tested, to facilitate tests and inspections, storage and curing of test samples.

H. The Contractor shall notify Architect/Engineer and laboratory 48 hours prior to expected time for operations requiring inspection and testing services.

I. The Contractor may arrange with laboratory and pay for additional samples and tests desired by Contractor beyond specified requirements.

OWNER

A. Engineer will perform periodic field inspections to determine if testing is required.

END OF SECTION

SECTION 01410

TESTING LABORATORY SERVICES

PART 1 GENERAL

1.1 SECTION INCLUDES

A Selection and payment.

B Contractor submittals.

C Laboratory responsibilities.

D Laboratory reports.

E Limits on testing laboratory authority.

E Contractor responsibilities.

F Schedule of inspections and tests.

1.2. REFERENCES

A. ANSI/ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

1.3 SELECTION AND PAYMENT

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A. Contractor shall employ the services of an independent testing laboratory to perform specified inspection and testing, if required to do so by FWP Engineer. The testing agency will be approved by the FWP Engineer prior to testing. If the testing agency results indicate the material or work meets the related specifications, the cost of the testing will be paid by the Owner.

B. Employment of testing laboratory shall in no way relive Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.4 QUALITY ASSURANCE

A. Comply with requirements of ANSI/ASTM E329 and ANSI/ASTM D3740.

B. Laboratory: Authorized to operate in state in which Project is located.

C. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.

D. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards (NBS) Standards or accepted values of natural physical constants.

1.5 CONTRACTOR SUBMITTALS

A. Prior to testing, submit testing laboratory name, address, and telephone number, and names of full time registered Engineer and responsible officer.

B. Submit copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards (NBS) during most recent tour of inspection, with memorandum of remedies of any deficiencies reported by the inspection.

1.6 LABORATORY RESPONSIBILITIES

A. Perform specified inspection, sampling, and testing of Products in accordance with specified standards.

B. Ascertain compliance of materials and mixes with requirements of Contract Documents.

C. Promptly notify Engineer and Contractor of observed irregularities or non-conformance of Work or Products.

1.7 LABORATORY REPORTS

A. After each inspection and test, promptly submit two copies of laboratory report to Architect/Engineer, and to Contractor.

B. Include:

1. Date issued,
2. Project title and number,
3. Name of inspector,
4. Date and time of sampling or inspection,
5. Identification of product and Specifications Section,
6. Location in the Project,
7. Type of inspection or test,
8. Date of test,
9. Results of tests,
10. Conformance with Contract Documents.

C. Provide interpretation of test results to Engineer.

1.8 LIMITS ON TESTING LABORATORY AUTHORITY

A. Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.

B. Laboratory may not approve or accept any portion of the Work.

C. Laboratory may not assume any duties of Contractor.

D. Laboratory has no authority to stop the Work.

1.9 CONTRACTOR RESPONSIBILITIES

A. Contract with an appropriate testing agency and make arrangements with the testing agency to perform the tests required in the contract documents.

END OF SECTION

SECTION 01560

TEMPORARY CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Weed Control.

B. Water Control.

C. Dust Control.

D. Erosion and Sediment Control

E. Pollution Control

F. Traffic Control

1.2 RELATED SECTIONS

A. Section 01010 - Summary of Work

B. Section 01039 - Coordination and Meetings

1.3 WEED CONTROL

A. Seed and reclaim disturbed areas as soon as possible.

B. Thoroughly clean equipment before bringing on site and notify Engineer for inspection.

1.4 WATER CONTROL

A. Grade site to drain away from natural water bodies. Maintain excavations free of water.

B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.5 DUST CONTROL

A. Contractor shall grade and compact materials as soon as possible after being placed.

1.6 EROSION AND SEDIMENT CONTROL

A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.

B. Minimize amount of bare soil exposed at one time.

C. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.

D. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.

E. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

1.7 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

1.8 TRAFFIC CONTROL

A. Provide all temporary signing, personnel and traffic control devises as required by federal, state and local regulations.

END OF SECTION

SECTION 01600

MATERIAL AND EQUIPMENT

PART I GENERAL

1.1 SECTION INCLUDES

A. Products.

B. Transportation and handling.

C. Storage and protection.

D. Substitutions.

1.2 PRODUCTS

A. Products: Means new material, components, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.

B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

1.3 TRANSPORTATION AND HANDLING

A. Transport and handle products in accordance with manufacturer's instructions.

B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.4 STORAGE AND PROTECTION

A. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.

B. For exterior storage of fabricated products, place on sloped supports, above ground.

C. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.

D. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

E. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

1.5 SUBSTITUTIONS

A. Engineer will consider requests for Substitutions only within 15 days after date established in Notice to Proceed.

B. Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.

C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

D. A request constitutes a representation that the Contractor:

1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.

2. Will provide the same warranty for the Substitution as for the specified product.

3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.

4. Waives claims for additional costs or time extension which may subsequently become apparent.

E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

F. Substitution Submittal Procedure:

1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.

2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence.

3. The Engineer will notify Contractor, in writing, of decision to accept or reject request.

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Closeout procedures.

B. Final cleaning.

C. Adjusting.

D. Project record documents.

1.2 CLOSEOUT PROCEDURES

A. Notify the Engineer within 5 days of Work completion that Work is complete in accordance with Contract Documents and ready for Project Manager's final inspection.

B. Provide submittals to Engineer that are required by governing or other authorities or Owner.

C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due. Include Certificate of Substantial Completion, Affidavit on Behalf of the Contractor, Consent of Surety Company to Final Payment and As-built drawings and specifications.

D. Owner will occupy all portions of the site.

1.3 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean equipment and fixtures to a sanitary condition.

C. Clean site, rake clean landscaped areas, leave all disturbed areas relatively smooth with no wheel tracks, ridges or ruts.

1.4 PROJECT RECORD DOCUMENTS

A. Maintain on site, one set of the following record documents; record actual revisions to the Work:
   1. Contract Drawings.

   2. Specifications.

3. Addenda.

4. Change Orders and other Modifications to the Contract.

5. Reviewed shop drawings, product data, and samples.

B. Store Record Documents separate from documents used for construction.

C. Record information concurrent with construction progress.

D. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:

1. Manufacturer's name and product model and number.

2. Product substitutions or alternates utilized.

3. Changes made by Addenda and Modifications.

E. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:

1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

2. Field changes of dimension and detail.

3. Details not on original Contract drawings.

4. Product substitutions or alternates utilized.

5. Changes made by Addenda and Modifications.

F. Submit documents to Engineer with claim for final Application for Payment.

1.5 WARRANTIES

A. All work shall be warranted free from defect for a period of one year from final inspection date.

END OF SECTION

SECTION 02110

SITE CLEARING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Remove surface debris.

B. Clear only areas designated for construction of plant life and grass.

C. Tree and shrub removal.

D Topsoil excavation.

E. Measurement and Payment

1.2 REGULATORY REQUIREMENTS

A. Conform to State and County codes for disposal of debris and burning debris on site.

B. Coordinate clearing Work with utility companies.

PART II EXECUTION

1.1 PROTECTION

A. Locate, identify, and protect utilities that remain, from damage.

B. Protect trees, plant growth, and features designated to remain, as final landscaping.

1.2 CLEARING

A. Clear areas required for access to site and execution of Work.

B. Remove root system of woody plants to a depth of 24 inches below finished grade.

C. Clear undergrowth and deadwood, without disturbing subsoil.

1.3 REMOVAL

A. Remove extra top soil, rock, and extracted plant life to designated area.

B. Dispose of any additional material according to local regulations.

1.4 TOPSOIL EXCAVATION

A. Excavate and stockpile topsoil from all areas that are to receive fill or further excavation.

B. Stockpile location to be approved by Engineer.

1.5 MEASUREMENT AND PAYMENT

A. The work described in Section 02110 will be incidental to the Excavation. See Item #2 on the Bid Proposal Form and Section 01010 Summary of Work

END OF SECTION

SECTION 02207

AGGREGATE MATERIALS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. References

B. Submittals

C. Aggregate materials and engineering fabric

D. Source quality control

E. Stockpiling

F. Stockpile clean up

1.2 RELATED SECTIONS

A. Section 02211 - Rough Grading.

B. Section 02231 - Aggregate Courses.

1.3 REFERENCES

A. AASHTO - M147 - Materials for Aggregate and Soil-Aggregate.

B. ANSI/ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.

C. ANSI/ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb. (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.

D. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

E. ASTM D4318 - Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.4 SUBMITTALS

A. Submit laboratory test results for each type of aggregate material 15 days prior to installation, for Project Manager approval.

1. Each aggregate material used as a base or surfacing material shall have as a minimum the following laboratory tests completed:

I. Sieve Analysis
II. Proctor
III. Atterberg Limit Test (crushed top surfacing only)

B. Materials Source: Submit name of imported materials suppliers. Provide materials from same source throughout the work. Change of source requires retesting at the Contractor's expense.

C. Change of source requires Engineer's approval.

PART 2 PRODUCTS

2.1 AGGREGATE MATERIALS AND ENGINEERING FABRIC

A. Crushed Base , 3" (-) free of shale, clay, friable material and debris; graded in accordance with AASHTO T-11 and T-27, within the following limits:

TABLE OF GRADUATIONS
Percentage of Weights Passing Square Mesh Sieves

	Grade 1
3 Inch Sieve	100%
No. 4 Sieve	25-60%
No. 200 Sieve	2-10%

1. Material shall be evenly graded.
2. 5% oversized material is permitted.

B. Crushed Top Surfacing; free of silt, lumps of clay, loam, friable or soluble materials, and organic matter; graded in accordance with ANSI/ASTM C136; within the following limits:

TABLE OF GRADUATIONS
Percentage by Weights Passing Square Mesh Sieves

Passing	% Passing
1”	100 %
3/4”	
1/2”	
3/8”	
#4	40% - 70%
#10	25% - 55%
#16	
#30	
#50	
#100	
#200	5% - 12%

The aggregate for all grades, including added binder or filler, shall meet the following supplemental requirements.

(1) Dust Ration. The portion passing the No. 200 Sieve shall not be greater than 2/3 of the portion passing the No. 40 Sieve.

(2) The liquid limit for that portion of the fine aggregate passing a No. 40 Sieve shall not exceed 25 and the plasticity index (PI) shall be less than six, as determined by AASHTO T-89 and T-90.

(3) No intermediate sizes for cover aggregate, or for other purposes, shall be removed from the material in the course of production unless authorized in writing by the Architect/Engineer.

(4) The material shall meet all the requirements of this section when it arrives on the project site. Windrow mixing of different materials to obtain the specified material will not be allowed. If bentonite is to be added, it shall be done in a method approved by the Engineer.

(5) At least 50% by weight of the aggregate retained on the No. 4 sieve must have at least one mechanically fractured face.

C. Drain Rock; 2" – 3" washed cobble free of silt, lumps of clay, loam, friable or soluble materials, and organic matter.

D. Engineering fabric

(1) Engineering fabric used, as a separation layer beneath the drain rock shall be Propex Geotex 200ST or equivalent fabric.

(2) Substitution of fabrics other than called out will require submittal of manufacturers data sufficient to determine equivalence and suitability of product for contract use.

2.2 SOURCE QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 01019.

B. Tests and analysis of aggregate material will be performed in accordance with AASHTO T-11 and T-27 and as specified in this Section.

C. If tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.1 STOCKPILING

A. Stockpile materials on site at locations approved by Engineer.

B. Separate differing materials with dividers or stockpile apart to prevent mixing.

C. Stockpile in sufficient quantities to meet project schedule and requirements.

D. Direct surface water away from stockpile site so as to prevent erosion or deterioration of materials.

3.2 STOCKPILE CLEANUP

A. Remove stockpile, leave area in a clean, neat condition reseed as necessary. Grade site surface to prevent freestanding surface water.

END OF SECTION

SECTION 02211

ROUGH GRADING

PART 1 GENERAL

1.1 SECTION INCLUDE

A. Removal of topsoil and subsoil.
B. Excavating, grading, filling and rough contouring the site for parking area and boat ramp construction.
C. Measurement and Payment

1.2 RELATED SECTIONS

A. Section 01410 - Testing Laboratory Services: Testing fill compaction.
B. Section 02110 - Site Clearing
C. Section 02207 - Aggregate Materials.

1.3 REFERENCES

A. AASHTO T180 - Moisture-Density Relations of Soils using a 10-lb (4.54 kg) Rammer and an 18-in. (457 mm) Drop.

B. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

PART 2 EXECUTION

2.1 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. Notify utility companies to locate buried utilities.

D. Locate, identify, and protect utilities that remain from damage.

2.2 TOPSOIL AND SUBSOIL EXCAVATION

A. Excavate topsoil and subsoil from marked areas.

B. Stockpile topsoil in area approved by Engineer.

C. Topsoil will be blended into landscape and seeded, or used for reclamation on site. See Section 02936

2.3 FILLING

A. Fill areas to contours and elevations with unfrozen materials.

B. Place fill materials on continuous layers and compact. See Section 02231

C. Maintain optimum moisture content of fill materials to attain required compaction density.

D. Make grade changes gradual. Blend slope into level areas.

2.4 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed as necessary by the Engineer.

B. Compaction testing will be performed in accordance with ASTM D2922. <u>If determined necessary by the FWP Engineer.</u>

C. Placement of base aggregate and subsequent road surfacing shall not commence until Engineer has been notified and has had 48 hours to inspect rough grading.

2.4 MEASUREMENT AND PAYMENT

A. The Rough Grading described in Section 02211 shall be included under Excavation Bid Item #2 on the Bid Form.

END OF SECTION

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SECTION 02231

AGGREGATE COURSES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Aggregate courses.

1.2 RELATED SECTIONS

A. Section 01025 - Measurement and Payment: Requirements applicable to lump sum.

1.3 REFERENCES

A. AASHTO T180 - Moisture-Density Relations of Soils using a 10lb (4.54 kg) Rammer and an 18 in. (457mm) Drop.

B. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

C. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

PART 2 PRODUCTS

2.1 SURFACING MATERIALS

A. 1 inch minus Crushed Top Surfacing (CTS): As specified in Section 02207.
B. 3 inch minus crushed base course: As specified in Section 02207.

PART 3 EXECUTION

3.1 AGGREGATE PLACEMENT

A. Spread material over prepared substrate to a total compacted thickness indicated for each material. A vibratory roller is suggested for compaction.

B. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.

C. Use mechanical tamping equipment in areas inaccessible to compaction equipment. Compact both to minimum 90 percent of maximum density.

3.2 TOLERANCES

A. Flatness: Maximum variation of 1/10 foot in 10 feet measured along existing slope.

B. Scheduled Compacted Thickness: Within 1/4 inch of designated thickness.

C. If tests indicate Work does not meet specified requirements, Project Manager may at his discretion direct the Contractor to rework the material and retest or remove work, replace and retest.

3.3 FIELD QUALITY CONTROL

A. Contractor will be responsible for field quality control.

B. Compaction testing will be performed in accordance with ASTM D2922.

C. If tests indicate Work does not meet specified requirements, recompact and retest or at Engineer's discretion, remove Work, replace and retest.

3.4 MEASUREMENT AND PAYMENT

A. All material and labor described in this section shall be bid and compensated under the associated material as listed on the bid form.

END OF SECTION

SECTION 02839

WIRE FENCE

PART 1 DESCRIPTION

Work under this specification shall consist of furnishing materials, erecting and constructing new fence of smooth wire fastened to posts, constructing single panels, double panels, corners, and installing gates, and performing similar operations, all in conformity with specifications, plans, drawings, and other instruction.

PART 2 MATERIALS

1. Barbless wire shall be two smooth twisted strands of 12-½-gauge wire; zinc coated steel meeting requirements of ASTM A-121 or equal. Breaking strength of a strand of wire shall be not less than 950 pounds, Minimum weight of zinc coating shall be Class I
2. Brace wire shall be barbless, single strand of 9-gauge wire meeting requirements of ASTM A-641. Wire shall be zinc-coated steel with a minimum coating of zinc meeting Class I requirements. It will be used for constructing braces and panels, tying to anchors, etc.

3. Staples. Wire staples of the barbed U-shaped type shall be used to fasten the wire fencing to the wooden posts. They shall be not less than 9 gauge, 1 3/4 inches long, bright finished or galvanized.

4. Nails. Shall be 40 d ring shank.

5. Fence clips shall be not lighter than 11 gauge, galvanized. They shall be used to fasten the wire to metal posts.

6. Stays shall be 30" long twisted wire fence stay specifically manufactured for use as fence stays and made from #9 gauge galvanized smooth wire.

7. Steel Metal Posts shall meet the requirements of ASTM A-702 and be American manufactured. Painting shall be in accordance with good manufacturing practice. Posts shall be 5 1/2 feet long. The metal shall be good commercial quality steel with maximum carbon content of 0.82%. Posts shall be Tee or U-bar section and shall have corrugations, knobs, notches, holes, or studs so placed and constructed as to engage a substantial number of fence line wires in proper position (punched tabs for fastening wire are not acceptable). Each line post shall have a steel anchor plate weighing not less than 0.67 pounds, tapered to facilitate driving and securely fastened by means of a weld or riveted, in such a position that its top edge will be two to three

inches below ground when the post is driven to the prescribed depth. Post shall weigh 1.33 lbs. per L.F. of post.

8. Wood Posts and Brace Rail. Posts and brace rail shall be made from western larch, lodge pole pine, ponderosa pine, or Douglas fir. They shall have the bark removed, be well seasoned, sound, and straight-grained. They shall be finished round. Posts shall be **5**-inch minimum diameter and **7** feet in length. Posts shall be treated with a preservative solution conforming to AWPA standards. Penetration shall be at least 1/2 inch. Post shall be fully treated. Posts that are to be driven shall be tapered and treated. Brace rail shall be a minimum 4-inch diameter and shall be 8 feet long fully treated.

9. Gates and Single Panels. Post and brace rail shall be the same as specified for line fence panels and corners. Gates shall bE 14'-16' wide or as indicated and shall be located at the same locations as existing gates or as directed by the Project Manager. Gates shall have 4 strands of barbwire with 2 wood stays per 16' width. Stays shall be 1 1/2" –2 1/2" poles. Each gate shall have a new single panel on each side of wire gate and a mechanical over-center gate closer.

10. Dead men anchors shall be used at grade depressions. They shall consist of 10-gauge mild steel of 12-inch diameter. A No. 5 rebar shall be welded in the center and a loop formed in the other end to accept the tie wire. Rebar length shall be 30 inches after the loop is formed. Other anchor types may be accepted upon approval of the Project Manager. Commercial Duckbill anchors are also approved.

PART 3 CONSTRUCTION METHODS

1. The fence line shall be staked & lathed to line of sight by others. The contactor shall take care not to remove the staking until after the line is inspected and accepted. Property corners and other survey monuments shall not be disturbed. In the case of a conflict notify the Project Manager. Re-staking due to carelessness by the contractor shall be at the contractor's expense. The new fence shall be installed 1' within the Department's property line.

2. Postholes and excavations for footings and anchors shall be excavated on the lines established by the Project Manger to the depths and cross-sections shown on the standard drawings. Wooden posts may be driven when so prepared and any damaged posts shall be repaired or rejected. Post shall be plumb when set.

3. All posthole filling and backfilling work shall be in six-inch layers and each layer shall be solidly tamped and compacted as it is placed.

4. Posts that are cut or trimmed for any valid reason shall be given two coats of EPA approved preservative material approved by the Project Manager. Braces shall be securely nailed to terminal and brace posts. Brace to post joint shall be coped or notched. No square to round joint accepted.

5. Dead men or anchors will be used at grade depressions, angle points, and other places where unusual stresses will be exerted on the fence. Additional strands of barbwire may be used in depressions where a dead man is placed and shall be equally spaced on 8-inch intervals except for the last wire above the ground, which shall be barbless wire and situated 18 inches above the ground.

6. Brace panels shall be installed wherever a break in the terrain occurs. However, in no case shall brace panels be more than 30 rods apart. Two strands of brace wire will be used in accordance to standard drawing. Brace wire shall be tight when twisted. Barbwire fence wire shall be tied off at each brace.

7. All posts shall be plumb and solidly set in place after backfilling or driving has been completed.

8. Stretching by a motor vehicle will not be permitted; the power must be by or through a mechanical stretcher or device designed for such use.

9. Fence line shall be straight and square between corner points.

10. Fence clips shall be bent all the way around fence wire.

11. Tension shall be applied in accordance with wire manufacturer's recommendations.

12. Fence wire shall be wrapped around terminal posts and fastened to itself with at least four turns. Fence wire, in general, shall be placed on the side of the post opposite the site but on curves shall be placed so the force is against the post. At grade depressions and alignment angles, where stresses tending to pull posts from the ground are created, the wire fence shall be snubbed or guyed at the critical points by brace wire attached to each horizontal line of fence wire and the end of the combined strands being firmly attached to a "dead man" buried not less than two feet in the ground, or to an approved "anchor" at a point which will serve best to resist the pull of the wire fence. "Dead men" also may be fastened to posts.

13. U-shaped staples shall be driven diagonally across the wood grain so that both points do not enter between the same grain. In depressions where wire up-lift occurs, staples shall be sloped slightly upward, against the pull of the wire. On level ground and over knolls, staples shall be sloped slightly downward. Wire shall be stapled tightly

at corner, end, and pull posts. In no case shall staples be driven so tight as to damage the wire.

14. A cross-fence, not the property of the Owner, shall not be fastened to the Owner's fence but shall be terminated, in a workmanlike manner, adjacent to the owners fence.

15. Upon completion, the fence shall be true to line and grade; all posts shall be vertical and firm and all wire shall be taut and the completed fence shall be completely acceptable in all respects; no openings shall be left that will permit stock or animals to pass through the fence.

18. Weed Control: All equipment used during construction shall be thoroughly washed both inside, outside, underneath, pickup boxes, trailer's, trucks, etc. before entrance to the project area. Vehicles used to commute to and from job site shall be kept clean as not to transport weed seed to project area. This cost shall be subsidiary to the project and considered incidental thereto and no payment shall be made for it.

PART 4 METHODS OF MEASUREMENT

3. Dead men anchors, signs and any line clearing required shall be subsidiary to the fence and considered incidental thereto.
4. Fencing will not be measured, but paid on a lump sum basis.

PART 5 BASIS OF PAYMENT

1. Barbwire fence construction and barb wire fence removal shall be paid for on a lump sum basis.

Payment for the various items specified on the plan sheets shall be full compensation for furnishing all labor, materials, tools, and equipment necessary or incidental to the construction of the complete fence and gates, including excavation, backfilling anchors, tamping, miscellaneous hardware, smoothing the irregularities of the ground at fence site, and disposing of all debris, all to the satisfaction of the Engineer.

END OF SECTION

SECTION 02936

SEEDING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Measurement and Payment

B. Quality assurance

C. Delivery storage and handling of seed and fertilizer

D. Seed mixture

E. Soil materials

F. Fertilizer

G. Examination of soil base

H. Substrate preparation

I. Placing topsoil

J. Fertilizing

K. Seeding

L. Maintenance

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Grassed Areas:
   1. Basis of Measurement: Not measured. Lump Sum. See Bid Item #7 on the Bid Form.
   2. Basis of Payment: Lump Sum. Includes preparation of topsoil and seeding.
   3. Seed and Fertilize those areas disturbed by construction and areas of existing roads and parking that are outside of the new roads and parking areas..

1.3 REFERENCES

A. FS O-F-241 - Fertilizers, Mixed, Commercial.

1.4 DEFINITIONS

A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Knapweed, Horsetail, Morning Glory, Rush Grass, Mustard, Leafy Spurge, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel and Brome Grass.

1.5 QUALITY ASSURANCE

A. Provide seed mixture in containers showing percentage of pure live seed, seed mix, year of production, net weight, date of packaging, and location of packaging.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products such that they are stored in a weatherproof, dry, rodent free location in such a manner that it will not be damaged or its usefulness impaired.

B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.7 SEED MIXTURE (By Weight)

A. <u>Native Grass Seed Shall Be: % By Weight</u>

Western Wheatgrass	40%
Slender Wheatgrass	25%
Canadian Bluegrass	25%
Hard Fescue	10%

B. All seed shall comply with and be labeled in accordance with the Montana Seed Law. Seed shall have been grown in the North American Continent, in an area having climatic conditions and elevation similar to area of use. All seed should be of standard grade. The seed may be rejected by the Project Manager if the point of origin and production is not suitable.

1.8 SOIL MATERIALS

A. Topsoil: Excavated from site and free of excess vegetation.

1.9 FERTILIZER

A. Fertilizer: Recommended for native grass in proportions to meet requirements for actual nitrogen and phosphate as outlined in Section 2.4.A.

B. Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of grass.

PART 2 EXECUTION

2.1 EXAMINATION

A. Verify substrate base has been contoured and compacted.

B. If there is not enough topsoil for total area, the Engineer shall prioritize areas of topsoil.

2.2 SUBSTRATE PREPARATION

A. Eliminate uneven areas and low spots.

B. Remove debris, roots, branches, stones, in excess of 1 inch in size. Remove subsoil contaminated with petroleum products.

C. Scarify subgrade to depth of 3 inches where topsoil is to be placed. Scarify in areas where equipment is used for hauling and spreading topsoil and has compacted subsoil.

2.3 PLACING TOPSOIL

A. Place topsoil in disturbed areas to a nominal compacted depth of 2 inches. Place topsoil during dry weather.

B. Fine grade topsoil eliminating rough or low areas. Maintain profiles and contour of subgrade.

C. Remove roots, weeds, rocks and foreign material while spreading.

D. Manually spread topsoil close to trees and plants to prevent damage.

E. Lightly compact placed topsoil.

F. Place excess topsoil on obliterated roadways.

G. Leave stockpile area and site clean and raked, ready to receive landscaping.

H. All topsoiled areas shall be "garden raked" after seeding to remove the debris and wheel tracks. The final surface shall be smooth.

2.4 FERTILIZING

A. Furnish fertilizer at the rate of 30 pounds actual nitrogen and phosphate per acre. Fertilizer shall be evenly applied to native grass areas which are to receive seed at the rate of 30 pounds of actual nitrogen and phosphate per acre and worked lightly into the top one inch of soil in such a way as to make a finely pulverized seedbed approximately 48 hours prior to seeding. This operation may be accomplished by broadcast and hand raking or drilling with a fertilizer drill.

B. Apply after smooth raking of topsoil.

C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.

D. Lightly water to aid the dissipation of fertilizer.

2.5 SEEDING

A. Grass seed shall be sown at the rate of 25 pounds pure live seed per acre on native grass areas using broadcast methods.

B. Planting Season: Fall, after August 15th or spring prior to May 1.

C. Do not sow immediately following rain, when ground is too dry, or during windy periods. Wind speed should not exceed 5 mph.

D. All disturbed areas shall be fertilized and seeded unless otherwise directed.

2.6 MAINTENANCE

A. Immediately reseed areas which show bare spots.

B. Protect seeded areas from traffic or pedestrian use with warning barricades or other Engineer approved methods.

END OF SECTION

SECTION 02950

EROSION CONTROL FABRIC

PART 1 GENERAL

1.1. DESCRIPTION

A. The Work covered by this section includes the furnishing of all labor, materials, equipment and incidentals for construction and installation of Erosion Control Fabric on designated surfaces adjacent to the road improvement project.

PART 2 MATERIALS

2.1. EROSION CONTROL FABRIC

Coir fabric is a biodegradable erosion control fabric made from the fibers of coconut husks. Woven coir fabric is used as erosion control of floodplain surfaces.

A. COIR FABRIC MATERIAL PROPERTY REQUIREMENTS AND DIMENSIONS

` 1. The woven coir fabric material shall consist of 100% coconut fiber in continuously woven mat. The material shall conform to the following values:
Thickness ASTM D1777 0.30 in. (min)
Tensile Strength (dry) ASTM D4595 60 x 60 lb./in. (min)
Mass Per Unit Area ASTM D3776 13 oz./sy. (min)
Open Area Measured 65% (max)
Roll Width Measured 9.84 ft. (min)

B. PREAPPROVED PRODUCTS

1. The following products have been pre-approved. Do not order, deliver, or install other products without the written approval of the Engineer.

2. Woven coir fabric shall be DeKoWe 400, Nedia KoirMat 400, Rolanka BioDMat 40 or approved equal.

3. The straw wattle material shall be North American Green WS925 or approved equal.

C. SUBMITTALS

1. Name, address, and phone number of supplier(s) of all coir fabrics used on

the project.

2. Technical Specification of the coir fabrics and straw wattle with associated testing standards with 8 by 10 inch samples in plastic bags.
3. Documentation of equivalency to products specified.
4. Dimensional sizes of delivered products.
5. Manufacturer's shipping, storing, and placement recommendations.

D. MATERIALS HANDLING AND STORAGE

1. Store all coir fabric and straw wattle elevated off the ground and insure that it is adequately covered to protect the material from damage. Protect fabric from sharp objects that may damage the material. Materials damaged during transport, storage or placement shall be replaced at the Contractor's expense.

2.2. WOODEN STAKES

A. Fabric stakes shall be wooden stakes 12 inches long and 1 inch by 0.75 inches in diameter, or other dimensions as approved by the Engineer. Fabric stakes shall not be treated with preservative. Other types of stakes shall be subject to the approval of the Engineer.

PART 3 EXECUTION

3.1. EROSION CONTROL FABRIC

A. This section describes the placement of woven coir fabric as Erosion Control Fabric on surfaces designated on the Plan Sheets and by the FWP Engineer.

B. Install Erosion Control Fabric as described in this section.

C. Seeding of the topsoil shall be carried out prior to installation of Erosion Control Fabric as described in Seeding.

D. Before placing Erosion Control Fabric, the topsoil surface on which it is to be placed shall be prepared by removal of all sharp objects. All holes and large ruts shall be filled with material.

E. The Contractor shall handle the fabric in a manner that does not damage the fabric. Place Erosion Control Fabric rolling the fabric lengthwise, parallel to the channel. Erosion Control Fabric shall be unrolled directly on the prepared surface.

F. Erosion Control Fabric shall be placed in parallel rows oriented in a downstream direction. End joints from one row to the next shall be offset by a minimum of 10 feet. Fabric end joints shall be overlapped in an

upstream to downstream direction to prevent flowing water from dislodging the fabric. Fabric parallel joints shall be overlapped in a nearest to channel over farthest to channel direction to prevent flowing water from dislodging the fabric. All joints between fabric rolls shall consist of a minimum of 12 inches of fabric overlap.

G. The Erosion Control Fabric shall be even, smooth, and taut, such that the fabric is in direct contact with the underlying soil in all areas, and to the satisfaction of the Engineer. Mechanical tightening may be required to remove slack.

H. Install Fabric Stakes along all edges, overlaps and at intervals as specified herein or as approved by the Engineer. Install Fabric Stakes at 4-foot spacing along all seams and at 4-foot spacing within fabric rolls, staggered with respect to seams. Do not cut woven coir fabric to install stakes: thread stakes between fabric strands. Stakes may be tilted up to 45degrees with respect to vertical if underlying materials prevent vertical insertion. After insertion, stake tops shall protrude 2 inches maximum above the adjacent fabric surface. Broken, split, or damaged stakes shall be removed and replaced at the Contractor's expense.

3.2. ENGINEER INSPECTION AND APPROVAL

A. Engineer shall approve the floodplain surface prior to the placement of the Erosion Control Fabric.

PART 4 MEASUREMENT AND PAYMENT

4.1. MEASURE

A. The quantity of Erosion Control Fabric shall be the actual fabric surface treatment area computed in square yards as the product of the measured length and width of exposed Erosion Control Fabric as seen in plan view, to the nearest 1 square yards. Overlapped fabric shall not be measured for payment.

4.2. PAYMENT

A. Payment for Erosion Control Fabric placed over reclaimed surfaces shall be made by unit cost basis. The unit cost per each square yard for Erosion Control Fabric shall constitute full compensation for all materials, staking, labor, Equipment, and incidentals necessary to furnish materials and for installation as specified in the specifications and on the Plan Sheets. Refer to Bid Item #6 on the bid form.

END OF SECTION

SECTION 13131

PRECAST CONCRETE VAULT TOILET

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Site Work

B. Clearing and Grubbing

C. Pre-cast Vault Toilet

D. Gravel Bedding

E. Fill

F. Compaction

G. Footpath

1.2 RELATED SECTIONS

A. Section 01019 Contract Considerations

B. Section 01025 Measurement and Payment

C. Section 02110 Site Clearing

D. Section 02205 Soil Materials

E. Section 02207 Aggregate Materials

F. Section 02211 Rough Grading

G. Section 02936 Seeding

1.1 UNIT PRICES - MEASUREMENT AND PAYMENT

A. Install Concrete Vault Toilet:

1. Basis of Measurement: 1 each

2. Basis of Payment: Lump Sum, includes installing a owner supplied pre-cast concrete vault latrine to include coordinating the delivery of the latrine, excavating the hole, providing and installing bedding material, setting and backfilling the latrine.

B. ADA Path and Parking:

1. Basis of Measurement: Included in item for parking lot construction. Not measured.

2. Basis of Payment: Included in the cost for the parking lot.

PART 2 PRODUCTS

2.1 MATERIALS

A. Pre-cast Latrine.
1. Montana Department of Fish, Wildlife and Parks will supply the latrine.

B. Gravel Bedding for Latrine.
1. Gravel, 1" (-), Section 02207.

PART 3 EXECUTION

3.1 EXCAVATION.

Excavate for the installation of the toilet vault to a depth that will allow the structure site to be free draining after installation is completed. Salvage topsoil.

3.2 FINISH FLOOR ELEVATION.

Finish floor elevation shall be as staked by the owner. Contractor will install building with the floor elevation within plus or minus 0.1 feet of the specified floor elevation.

3.3 COMPACTION OF EARTH UNDER TOILET VAULTS.

Prior to installation of the toilet building, compact the natural ground underlying the vault with a minimum of three passes with a whacker-type mechanical tamper or equivalent approved by the Project Manager.

3.4 INSTALLATION OF GRAVEL BEDDING UNDER TOILET VAULTS.

Install 4 to 6 inches of gravel bedding material for leveling course. Compact leveling course with one pass with a whacker-type mechanical tamper or equivalent approved by the Project Manager. Grade level course so there will be no high spots in middle of vault bottom. Installed installation of bottom of toilet vault shall not vary more than 0.01 foot for the four corners of the vault. The inside floor will have a 1" slope toward the door.

3.5 BACKFILL AND DISPOSAL OF DEBRIS.

Backfill around structures, including under exterior slab. Use excavated material for backfill except that rocks larger than six inches in maximum dimension shall not be placed within six inches of exterior of vault walls. Stumps, roots, brush, and other vegetation shall be removed from the site and disposed of in a legal manner by the contractor.

3.6 COMPACTION UNDER ENTRANCE SLAB.

Fill under entrance slab shall have excavated material placed in six-inch loose lifts, and compacted with a minimum of two passes with a whacker-type mechanical compactor or equivalent approved by the Project Manager.

3.7 FILL AROUND LATRINES AND SLAB.

Spread excess excavated material from vault around structure. Final backfill surface shall be flush with the top of the front slab. Allowance shall be made for the depth of the topsoil. Grade backfill away from structure at maximum slope of five percent unless otherwise noted in the plans or specs or approved by the Project Manager.

3.8 TOPSOIL.

Spread stockpiled topsoil as final 2" layer after rough grading is completed. Areas disturbed by excavation, backfilling, and stockpiling of excavated materials shall be hand raked to removed exposed rocks over one-inch in maximum dimension. Oversize rocks removed from the surface shall be disposed of off-site or with the approval of the Project Manager used as fill in other items in the contract.

3.9 HIDDEN GROUND CONDITION.

If the contractor uncovers bedrock, boulders too big to remove, ground water or other unexpected conditions, he shall immediately contact the Project Manager for instructions.

3.10 TEMPORARY FENCING.

A. All excavations left open overnight shall be fenced with polyethylene plastic safety fence, orange color, 48" high, and 4" maximum mesh openings. Fencing shall be secured to steel posts on the side away from the excavation unless otherwise approved in advance by the Project Manager.

1. The bottom of the fence shall generally follow the contour of the ground.

2. Maximum spacing of the steel posts shall be ten feet.

B. No excavations will be left open more than seven days unless otherwise approved by the Project Manager.

END OF SECTION